

Compiled List of Detective Diaries for the Unit Plan: Statistical Sleuths

Directions for the diary: Throughout the unit, students (a.k.a. detectives) make entries in their Detective Diaries about the clues they discover while analyzing different sets of data. At the onset of the unit, students are presented with different problem situations that require the analysis of information in order to solve. After reviewing each entry, students will be asked to respond using techniques that they learned in each lesson. Responses will be recorded in the student's Detective Diary. The completeness of today's entries (2 and 3) will be formatively assessed using the Long - Answer Question Rubric (See Unit Plan associated file); further information provided in Extensions). The Detective Diary is used throughout the unit and should be in the classroom everyday. The lessons that correlate with the Unit Plan: Statistical Sleuths are (1) Designing Detectives, (2) Sampling Snoops, (3) The Guise of a Graph Gumshoe, and (4) Statistical Specimens.

1. **Detective Diary Entry #1:** Formulate your own hypothesis about how much homework average eighth grade students should do in order to make better grades in mathematics. Tell me how you would design an experiment to test this hypothesis. (Students will read a scenario before responding to this prompt and is located in the Diagnostic Assessment.)
2. **Detective Diary Entry #2:** Formulate a hypothesis about what you think will happen in EACH of the Quickie Experiments (#1 - 3). Write these hypotheses in your diary. Detective Diary #2 serves as the formative assessment for MA.E.3.3.1.8.1. [LP#1]
3. **Follow-up for Detective Diary #2:** After seeing the results of the experiment, evaluate your hypothesis from Detective Diary #2 for each experiment by making inferences and drawing conclusions based on observations from the demonstration. Were your assumptions on target? Did you consider **all** of the variables in your hypothesis that shaped the outcome during the demonstration? Follow-up for Detective Diary #2 serves as the formative assessment for MA.E.3.3.1.8.3. [LP#1]
4. Pose the class question: How much time should the average eighth-grade student spend on homework per week to make good grades (a **B** average or higher)?
Detective Diary Entry #3: Formulate a hypothesis and design an experiment to test how much time the average eighth-grade student should spend on homework per week to make good grades. Detective Diary #3 serves as the formative assessment for MA.E.3.3.1.8.1. [LP#1]
5. **Detective Diary Entry #4:** Formulate a hypothesis regarding the number of work hours per week saved/spent when the average eighth grade student uses a calculator in math. Design an experiment to test your hypothesis. This is the formative assessment for MA.E.3.3.1.8.1. [LP#2]
6. Record the definitions of random, systematic, and stratified sampling techniques in your Detective Diaries. [LP#2]
7. **Detective Diary Entry #5:** Record the notes taken regarding the specific elements of a histogram. [LP#2]

8. **Detective Diary Entry #6**: Using the statistical results provided in the Data Detective Diary #6 Reference Sheet, answer the question: What conclusions can be drawn based on the inferences from the data? [LP #2]
9. **Detective Diary Entry #7**: Record the information from the large display of the Bar Graph K-W in your diary. [LP#3]
10. **Detective Diary Entry #8**: Record the information from the large display of the Circle Graph K-W in your diary. [LP#3]
11. **Follow-up for Detective Diary Entry #7 and 8**: Complete the **L** section of your K-W-L in DD#7 and DD#8. (This is formative assessment for MA.E.1.3.1.8.2). [LP#3]
12. **Detective Diary Entry #9**: Define each of the following sampling techniques: random, systematic, and stratified. Also, define when a sample can be biased. Include as much specific information as possible. This serves as formative assessment for MA.E.3.3.2.8.3 and MA.E.3.3.2.8.4. [LP#4]
13. **Detective Diary Entry #10**: (Final Entry) Formulate a hypothesis about how much time an average eighth grade student should spend on homework per week in order to make good grades (a **B** average or higher) in mathematics. Design an experiment to test this hypothesis. [Summative Assessment]

Key:

LP # =Lesson Plan number

[LP #1] = Designing Detectives

[LP #2] = Sampling Snoops

[LP #3] = The Guise of a Graph Gumshoe

[LP #4] = Statistical Specimens